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FILE 'CA' ENTERED AT 10:51:55 ON 24 SEP 2004

L1 3513 S ISOTOP?(1A)DILUT?(3A)ANALY? OR IDA OR ID MS
L2 2808 S L1 NOT(ISOTOP?(1A)DILUT?(3A)MASS SPECTRO? OR IDMS OR SIDMS)
L3 67 S L2 AND(AUTOMAT? OR ONLINE OR INLINE OR REAL TIME OR ONSTREAM OR
INSTREAM)
L4 44 S L2 AND(FLOW(1A)INJECT? OR PROCESS?(1A)ANALY? OR(PROCESS? OR
QUALITY)(4A)(CONTROL? OR MONITOR?))
L5 14927 S PROCESS(1A)ANALY?
L6 14919 S L5 NOT(ISOTOP?(1A)DILUT?(3A)MASS SPECTRO? OR IDMS OR SIDMS)
L7 492 S L6 AND MASS SPECTRO?
L8 89 S L7 AND(AUTOMAT? OR ONLINE OR INLINE OR REAL TIME OR ONSTREAM OR
INSTREAM OR FLOW(1A)INJECT?)
L9 192 S L3-4,L8
L10 157 S (L9 NOT PY>2001)OR(L9 AND PATENT/DT)

=> d bib,ab 1-157 110

L10 ANSWER 8 OF 157 CA COPYRIGHT 2004 ACS on STN
AN 136:78951 CA
TI Developments in process **mass spectrometry**
AU Traynor, Peter
CS Thermo ONIX Inc, Angleton, TX, USA
SO Technical Papers of ISA (2001), 413(ISA 2001 Technology Update, Volume
LVI, Part 1), 31-39
AB A review. **Online Process Mass Spectrometry** (PMS) is a mature technol.
that has benefited from a range of incremental improvements over recent
years. The modern PMS is a flexible **process anal.** tool that can be
adapted to a wide range of applications and operating environments.
The most compelling reason for selecting PMS over other available
technologies has generally been due to the potential for rapid anal. of
multiple streams for multiple components. The neg. aspect to this is
the high cost assocd. with unscheduled downtime. Any failure will
result in the loss of a significant amt. of **process anal.** data. Recent
developments that target higher reliability is discussed.

1435
L10 ANSWER 17 OF 157 CA COPYRIGHT 2004 ACS on STN
AN 134:240411 CA
TI Process control in metallurgy using an EMG-20 **mass-spectrometric** gas
analyzer
AU Markovskii, S. I.; Kozlovskii, A. V.; Fedichkin, I. L.; Gurevich, E.
L.; Begak, O. Yu.; Borodin, A. V.
CS METTEK Joint-Stock Co., St. Petersburg, Russia
SO Industrial Laboratory (Diagnostics of Materials) (Translation of
Zavodskaya Laboratoriya, Diagnostika Materialov) (2000), 66(6), 354-359
AB The potential use of an EMG-20 **mass-spectrometric** gas analyzer for
process control, safe operation and environmental monitoring in the
oxygen converter process is considered. The EMG-20 parameters are
adequate for rapid, **automatic online** anal. of metallurgical waste

gases. A multi-channel system of sampling, sample prepn., and transportation of sampled gases for anal. is proposed.

L10 ANSWER 18 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 134:105960 CA

TI **Analysis** of **process** impurities in the basic drug SB-253149 using capillary electrophoresis and on-line **mass spectrometric** detection

AU Okafo, George; Tolson, Dave; Monte, Soraya; Marchbank, John

CS SmithKline Beecham Pharmaceuticals, Essex, CM19 5AW, UK

SO Rapid Communications in Mass Spectrometry (2000), 14(23), 2320-2327

AB Capillary electrophoresis with **online** electrospray ionisation **mass spectrometry** (CE/ESI-MS) was used to identify process impurities in a batch of the anti-atherosclerotic drug, SB-253149. The impurities were sep'd. from the main drug comp'd. by capillary electrophoresis (CE) using an ammonium formate buffer at low pH in an untreated fused silica capillary. The CE method was initially developed using UV as the detection mode and then later structural elucidation work was achieved using an ion trap **mass spectrometer**. To maintain peak resoln. and peak shape when the CE system was coupled to the **mass spectrometer**, a modified capillary cassette linked to a coaxial sheath flow electrospray ionisation (ESI) interface was used. By performing MS/MS expts. in conjunction with chem. knowledge of the reactivities of SB-253149, it was possible to propose mol. structures for impurities detected in the batch of SB-253149. The results from this study revealed that most of the process impurities in SB-253149 were dimeric derivs. of the parent mol. as well as trace levels of the starting material. This type of information was vital in process control and optimization for the synthetic route for this drug.

L10 ANSWER 23 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 133:263521 CA

TI **Automated** process lines

IN Koster, Hubert; Yip, Ping; Steadman, Jhobe; Reuter, Dirk; Macdonald, Richard

PA Sequenom, Inc., USA

SO PCT Int. Appl., 57 pp.

PI	WO 2000060361	A2	20001012	WO 2000-US8111	20000327
	US 2002009394	A1	20020124	US 1999-285481	19990402
	US 6730517	B1	20040504	US 2000-680581	20001005
PRAI	US 1999-285481	A1	19990402		

AB A fully **automated** modular anal. system integrates instrumentation to permit anal. of biopolymer samples, such as nucleic acids, proteins, peptides and carbohydrates. The system integrates anal. methods of detection and anal., such as **mass spectrometry**, radiolabeling, mass tags, chem. tags, fluorescence and chemiluminescence, with robotic technol. and **automated** chem. reaction systems to provide a high-throughput, accurate **automated** system for high throughput analyses.

L10 ANSWER 30 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 133:30163 CA

TI Resonant laser **mass spectrometry** (REMPI - TOFMS): **online** - **process**

analysis for rapid analysis of soil samples

AU Zimmermann, Ralf; Heger, Hans Jorg; Dorfner, Ralph; Boesl, Ulrich; Kettrup, Antonius

CS GSF - Forschungszentrum fur Umwelt und Gesundheit GmbH Institut fur Okologische Chemie, Neuherberg, 85758, Germany

SO Initiativen zum Umweltschutz (1998), 8(Altholzverwertung), 147-164

LA German

AB A mobile resonance-amplified multi photon ionization (REMPI)-time of flight **mass spectrometry** (TOFMS) device was developed for the fast anal. of complex substance mixts. or industrial **online-process analyses**. Changes of process conditions were recorded by significant changes of the emission spectrum of arom. compds. in a refuse incinerator. In soil samples contaminated with 6 ppm poly arom. hydrocarbons, naphthalene, phenanthrene/anthracene, and pyrene were detected. Headspace REMPI mass spectra of different mineral oils are presented. Possible applications of the method in the fields of environmental and health care and industrial **process analyses** are discussed.

L10 ANSWER 37 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 132:39463 CA

TI Analysis of environmental pollutants by capillary gas chromatography/benchtop quadrupole MSMS

AU Takei, Yoshiyuki; Kurano, Mitsuyuhio

CS Japan

SO Chromatography (1999), 20(4), 382-383

LA Japanese

AB Capillary gas chromatograph coupled with **mass spectrometer** (GC-MS) provides powerful sepn.-identification technique, esp. for simultaneous anal. of multiple compds. in complex mixt. GC-MS can increase instrument detectability and simplify procedure of sample pretreatment. GC-MS is a serious candidate as a general anal. instrument for environmental pollutants which are time-consuming and their accuracy depends on operator's skill. GC-MS or GC-MS/MS exhibits versatility in order to improve reliability and simplify pretreatment, and allow a **anal. process** to be completely **automated** by combining as **automatic** pretreatment system from pretreatment-injection-measurement procedures through final report, for unattended operation.

L10 ANSWER 49 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 130:273619 CA

TI **Online** analysis of complex gas mixtures by **mass spectrometry**

AU Wright, Robert G.

CS VG Gas Analysis Systems, Winsford, Cheshire, UK

SO AT-PROCESS (1999), Volume Date 1998-1999, 4(1,2), 71-78

AB **Mass spectrometry** (MS) is being increasingly applied to more complex **online** gas anal. for **process** control. This paper discusses MS system features that improve the anal. of complex gas mixts. Also described in this paper is the **online** anal. of coke oven gas and liq. feed ethylene cracker furnace effluent as examples of complex gas anal. by MS.

- L10 ANSWER 50 OF 157 CA COPYRIGHT 2004 ACS on STN
AN 130:273305 CA
TI Developments in process **mass spectrometry**
AU Traynor, Peter
CS VG Gas Analysis Systems, A subsidiary of Onix Systems Inc., Beverly, MA, USA
SO AT-PROCESS (1999), Volume Date 1998-1999, 4(1,2), 33-38
AB A review with. **Online Process Mass Spectrometry** (PMS) is a mature technol. that has benefited from a range of incremental improvements over recent years. The modern PMS is a flexible **process anal.** tool that can be adapted to a wide range of applications, operating environments, and operator skill levels. The available options for achieving a well-engineered analyzer installation are discussed, with ref. to VG Gas Anal. systems.
- L10 ANSWER 55 OF 157 CA COPYRIGHT 2004 ACS on STN
AN 129:62209 CA
TI **Online process analyses** by resonant laser **mass spectrometry** (REMPI-TOFMS)
AU Zimmermann, Ralf; Heger, Hans Joerg; Dorfner, Ralph; Boesl, Ulrich; Kettrup, Antonius
CS Inst. Oekologische Chemie, GSF-Forschungszent. Umwelt Gesundheit, Oberschleissheim, D-85764, Germany
SO CLB Chemie in Labor und Biotechnik (1998), 49(6), 210-214
LA German
AB A mobile REMPI-TOFMAS (resonance-enhanced multiphoton ionization - time-of-flight **mass spectrometer**) has been developed for the anal. of highly complex gas mixts. The instrument, which uses UV-laser pulses allows a selective and sensitive ionization of compds. or classes of compds. The combination of a wavelength-selective REMPI ionization and a TOF **mass spectrometer** gives an instantaneous 2-dimensional anal. (wavelength/mol. wt.) with each laser pulse which makes this technique suitable for continual **online** anal. of gas mixts. with the help of a direct gas intake system. Topics discussed include the method, sample intake system, and **process anal.** Areas of application include waste incineration plants, environmental protection measures, and industrial **process anal.**
- L10 ANSWER 62 OF 157 CA COPYRIGHT 2004 ACS on STN
AN 127:139411 CA
TI A mobile resonance-enhanced multiphoton ionization time-of-flight **mass spectrometry** device for **online** analysis of aromatic pollutants in waste incinerator flue gases: first results
AU Zimmerman, R.; Heger, H. J.; Kettrup, H. J.; Boesl, U.
CS Inst. Okologische Chemie, GSF-Forschungszentrum Umwelt Gesundheit, Oberschleissheim, D-85758, Germany
SO Rapid Communications in Mass Spectrometry (1997), 11(10), 1095-1102
AB We have applied a newly designed, mobile, resonance-enhanced multiphoton ionization (REMPI) time-of-flight **mass spectrometer** for **real-time online** emission anal. of flue gases from a tech. waste

incineration pilot plant. With one-color REMPI (laser wavelength: 248 nm), benzene, toluene, phenol, several polycyclic arom. hydrocarbons (PAH, here naphthalene, anthracene/phenanthrene, pyrene etc.) and methylated PAH were detected in the flue gas, mostly in the 10-100 ppb concn. range. Time resols. up to 5 Hz were achieved. A change of combustion process operating conditions caused significant variations in the time-intensity profiles of different combustion products. This demonstrates the feasibility of the REMPI approach for **real-time online** trace **anal.** of **process** gases and combustion flue gases. Numerous practical industrial applications, ranging from emission monitoring and control, to process control in the chem., mineral oil, or food industries, and to quality control are possible.

L10 ANSWER 69 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 126:220107 CA

TI High throughput electrospray **mass spectrometry** of combinatorial chemistry racks with **automated** contamination surveillance and results reporting

AU Hegy, G.; Goerlach, E.; Richmond, R.; Bitsch, F.

CS Preclinical Res. Dep., Structural Analytical Chem. group, Basel, CH-4002, Switz.

SO Rapid Communications in Mass Spectrometry (1996), 10(15), 1894-1900

AB An **automated** high throughput, **flow injection** anal. electrospray ionization and atm. pressure chem. ionization **mass spectroscopy** system was developed to cope with the measurement of thousands of combinatorial chem. samples per mo. This system employs the 96-well Micronic sample rack as the basic sample handling unit. The entire **anal. process** encompasses **automated** input of sample information, set up of **mass spectrometer** anal. parameters, expected compd. checking and subsequent reporting to the customers. Strong emphasis was placed on the design of **automated** contamination surveillance and results reporting. A visual interface program was written-inhouse to facilitate customer viewing of their results via the Sandoz network.

L10 ANSWER 73 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 125:315489 CA

TI Determination of iodine using a special sample introduction system coupled to a double-focusing sector field inductively coupled plasma mass spectrometer

AU Kerl, Wolfgang; Becker, J. Sabine; Dietze, Hans-Joachim; Dannecker, Walter

CS Zentralabteilung Chem. Analysen, Forschungszentrum Juelich GmbH, Juelich, D-52425, Germany

SO Journal of Analytical Atomic Spectrometry (1996), 11(9), 723-726

AB A procedure for the detn. of iodine (esp. 129I) in biol. materials using double-focusing sector field mass spectrometry with an inductively coupled plasma ion source is described. To achieve a detection limit of less than 100 pg ml⁻¹ for 129I by double-focusing sector field ICP-MS an app. for introducing elemental iodine via the gas phase into the argon plasma is tested. The influence of the concn. of various oxidn. reagents for oxidizing iodide to iodine and matrix

effects on the ion intensity of $^{129}\text{I}^+$ and $^{127}\text{I}^+$ are investigated. Quant. detn. of iodide is carried out by the std. addns. procedure and **isotope diln. anal.** The **online** addn. of sample soln. to an isotopic tracer soln. according to the **flow injection** principle has proved to be efficient. The procedure is discussed by detg. ^{127}I as well as ^{129}I in biol. std. ref. materials.

L10 ANSWER 87 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 123:159732 CA

TI On-line measurements using **mass spectrometry**

AU Walsh, M.R.; LaPack, M.A.

CS Process Analyzer Recource Center, Dow Chemical USA, Freeport, TX, 77541-3257, USA

SO ISA Transactions (1995), 34(1), 67-85

AB A review, with 47 refs., is given. The purpose of this report is to provide background information and operating principles about process **mass spectrometry** to process operators. Those people who make it their business to operate and maintain chem. processes will understand the difficulty in producing a good quality product on a day-to-day basis. The use of **real-time process anal.** and control was useful in establishing and maintaining optimum operating parameters so that the potential for human error may be reduced. **Real-time** data allows the process operators to make decisions to immediately correct for a problem during the process so that the product quality can be preserved. Process **mass spectrometers** were used in Dow Chem. for ~20 yr in process control applications. In spite of this early start, the no. of applications for process **mass spectrometers** in Dow was relatively few. More recently, there is renewed interest in using **mass spectrometers** for **process anal.** because of their speed and multicomponent anal. capabilities. As a result, the no. of process **mass spectrometers** in Dow North America has more than doubled in the last five years. This paper presents the basic function of process **mass spectrometry** and compares process **mass spectrometry** with its main competitors, process gas chromatog. and process IR spectrometry.

L10 ANSWER 93 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 119:52258 CA

TI How to specify, design and maintain **online process analyzers**

AU Crandall, John A.

CS Anal. Instrum. Div., Perkin-Elmer Corp., Norwalk, CT, 06859-0001, USA

SO Chemical Engineering (New York, NY, United States) (1993), 100(4), 94-8

AB **Online** anal. of phys. or chem. compns. in dynamic processes was discussed including sampling, analyzers, GC, spectroscopy, and designing a system.

L10 ANSWER 95 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 118:51592 CA

TI Electrospray ion mobility spectrometry: its potential as a liquid-stream process sensor

AU Shumate, C. B.; Hill, H. H.

CS Dep. Chem., Washington State Univ., Pullman, WA, 99164-4630, USA

SO ACS Symposium Series (1992), 508(Pollut. Prev. Ind. Processes), 192-205
AB Ion mobility spectrometry is an anal. method in which ions are produced at atm. pressure and allowed to drift and sep. in an elec. field at intrinsic velocities. By monitoring the arrival time spectra of these atm. pressure ions, both qual. and quant. information can be obtained from an anal. sample. In the past, IMS has been used exclusively for gas phase anal. By employing electrospray ionization techniques, this study evaluates IMS for use with liq. samples. Using amines as test analytes, ion mobility reproducibility was studied as a function of time, solvents, electrospray voltage, sample matrix, and drift gas temp. In addn., electrospray ion-mobility spectrometry was demonstrated as a detection method for **flow injection** anal., chromatog., and continuous sample stream monitoring. Detection limits as low as 5×10^{-15} mol/s were detd.

L10 ANSWER 106 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 111:246854 CA

TI Background reduction through the use of pulsed valve sampling **mass spectrometry**

AU Gardner, John M.; Lester, Marsha I.; Kimock, Fred M.

CS Dep. Chem., Univ. Pennsylvania, Philadelphia, PA, 19104-6323, USA

SO International Journal of Mass Spectrometry and Ion Processes (1989), 91(2), 199-207

AB A new **mass spectrometric** technique, pulsed valve sampling **mass spectrometry** (PVSMS), is described. Significant signal-to-background improvement is obtained through the phenomenon of active background suppression. The technique promises improved detection limits in gas anal. and is ideal for use in **real-time** monitoring of bulk process gas streams for trace impurities. Current min. detectable concns. using a prototype instrument are 0.1 ppm for most trace components in samples of He and 0.5-1 ppm in samples of Ar and N₂. Ultimate sensitivities of sub-ppb are predicted if untunable ion noise in the spectrometer can be reduced.

L10 ANSWER 113 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 107:51099 CA

TI On-line **mass spectrometry** for **process analysis**

AU Adams, V. H.

CS Appl. Sci. Div., Perkin-Elmer Corp., Norwalk, CT, 06859-0012, USA

SO American Laboratory (Shelton, CT, United States) (1986), 18(12), 72, 74, 76-7

AB The operation and performance characteristics of the MGA-1200 **mass spectrometer** and its use for **online process anal.** are discussed.

L10 ANSWER 115 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 105:90259 CA

TI Central gas analysis laboratory with remote sampling

AU Ellefson, R. E.; Morgan, F. E.; Anderson, B. E.

CS Monsanto Res. Corp., Miamisburg, OH, 45342, USA

SO Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1986), 4(3, Pt. 1), 306-9

AB A computerized central anal. facility is described which remotely samples from 70 process points and analyzes the gas samples by **mass spectrometry** and other anal. techniques. Samples are transported through a capillary by pressure gradient to a vacuum manifold and ultimately to the inlet system of either of 2 **mass spectrometers**. Process pressures vary from 400 to 2500 torr which assures viscous, nonseparative flow within the capillaries, the capillary whose inside diams. range from 0.03 to 0.05 cm. An exhaust-gas recovery system to retain valuable T from samples is also described. The sampling manifold and inlet systems are fabricated from high vacuum components and tubing that is polished on interior surfaces. All valves can be computer controlled or manually operated from a central control console. Valve actuation is verified by process changes. The gas is analyzed by a computer-controlled, magnetic-sector **mass spectrometer**, the results archived in another computer and the approved results sent to the requestor via a data network.

L10 ANSWER 118 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 104:151638 CA

TI Rapid on-line control of multicomponent chemical streams by process mass spectral analyzers

AU Shen, J.

CS Lab. Dep., Arabian Amer. Oil Co., Dhahran, Saudi Arabia

SO Arabian Journal for Science and Engineering (1986), 11(1), 45-50

AB The principles of process **mass spectrometry**, analyzer design, and reactive, multicomponent streams are discussed with respect to the use of mass spectral analyzers in on-line control of multicomponent streams.

L10 ANSWER 122 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 98:64701 CA

TI Isotopic analyses of inorganic and organic substances by mass spectrometry

AU Heumann, K. G.

CS Inst. Anorg. Chem., Univ. Regensburg, Regensburg, D-8400, Fed. Rep. Ger.

SO International Journal of Mass Spectrometry and Ion Physics (1982), 45, 87-110

AB Isotope ratio detns. are esp. connected with labeling expts., with the detn. of natural isotope variations, with kinetic studies and with quant. **analyses** using **isotope diln.** technique. Whereas years ago the only relevant studies were on high precision isotope ratio measurements (relative std. deviation 0.1-0.001%), today lower precision in isotope ratio detns. (0.1-1%) is also suitable for many investigations, e.g. in medicine or in isotope diln. technique. In the case of high precision, new developments corresponding to multicollector systems, fully **automated** computer-controlled instruments, new loading techniques and calcns. for mass fractionation are given. For the main fields applying mass spectrometric isotope ratio detns., a selection of representative examples is discussed. The possibility of element trace analyses as well as of quant. detn. of org. species by isotope diln. technique is

explained. The different ionization methods which are mainly used for this technique are taken into account. Examples from medicine, biochem., environmental chem., and geochem. show the wide and powerful application of isotope ratio measurements in all natural sciences. A review with 108 refs.

L10 ANSWER 148 OF 157 CA COPYRIGHT 2004 ACS on STN

AN 71:18452 CA

TI Advantages of a two-detector system in **automated** substoichiometric radioisotope dilution analysis

AU Lamm, Carl G.; Ruzicka, J.

CS Tech. Univ. Denmark, Lyngby, Den.

SO Talanta (1969), 16(5), 603-11

AB **Automation** widens the scope of substoichiometric radioisotope diln. anal. This is because the very strict requirement of the manual method (chem. sepn. of exactly equal quantities of the test substance) need no longer be fulfilled: reproducibility of the detn. is reached by means of **automated** operation and activity measurement. The theory given shows how the choice of suitable chem. reactions is widened and why the reliability and the advantages of **isotope diln. anal.** are secured by the use of a 2-detector system.

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